

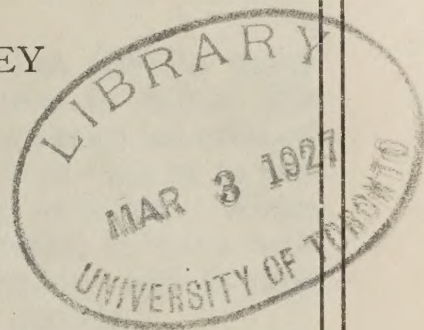


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Nova Scotia Apple Spray and Dust Calendars, 1927

BY

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NOVA SCOTIA

APPLE SPRAY AND DUST CALENDARS, 1927

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Sprays versus Dusts Both methods are effective. Where the grower has time to spray thoroughly a sufficient number of times, it is wise to follow this system. Where, however, the orchard owner cannot spray his orchard thoroughly a sufficient number of times, due to lack of time or to soft or hilly ground, then the dust system is a good one to follow. Where the size of the orchard warrants the expenditure, it is advisable to have both a sprayer and a duster, and to spray when there is opportunity and to dust otherwise, using the duster particularly during damp critical periods.

Times for Spraying and Dusting As a general rule at least four applications should be made. *First*, when the leaves are about one-quarter of an inch in diameter; *second*, just before the blossoms open; *third*, just after the blossoms fall; *fourth*, about twelve days later. There are many exceptions to the above, as may be observed below, under "Modifications for Special Pests." Dusts are more likely to wash off than sprays, and often have to be renewed more frequently. Dusts should be applied when the air is calm, and in the case of Bordeaux dust it is helpful if the foliage is wet.

DISEASES AND INSECTS CONTROLLED

Apple scab—all applications.

Bud moth—all applications.

Cankerworms, tent caterpillars—first and second applications.

Green fruit worms—second and third applications.

Codling moth—third application.

Tussock moth—third and fourth applications.

Fall web-worm, red-humped caterpillar—fourth application.

Fruit spot, sooty blotch, fly speck—fourth and later applications.

Spray and Dust Materials BORDEAUX SPRAY. Formula for the apple, 2-10-40 or 3-10-40—a strong fungicide. Should not be used immediately after blossoming as it causes "russeting" of apples. Sometimes causes "russeting," though to a less degree, when used later in the summer. Can be used at all times on Northern Spy, but should never be used, unless for first application, on Cox Orange. It is a good spray where cooking variety apples or green coloured apples predominate in the orchard, but for the production of apples of highest colour and best finish Bordeaux sprays should not be used, at least after the blossoming period. Arsenical insecticides are not quite as effective when used with Bordeaux mixture as they are when used alone or with sulphur sprays.

LIME-SULPHUR. Formula for the apple varies from 1-20 to 1-60 (specific gravity 1.016 to 1.005)—a strong fungicide. When spraying with this material, it is desirable to break the spray into as fine a mist as possible, and while covering the tree thoroughly to avoid over-drenching. To reduce foliage injuries to a minimum, do not "drown" the tree and do not use coarse driving sprays under high pressure. Also do not spray under damp or wet weather conditions, when the leaves will not dry for a lengthy period.

WETTABLE SULPHUR. Generally composed of 65 per cent superfine sulphur, 31 per cent hydrated lime, and 4 per cent calcium caseinate. Used at the rate of 30 pounds per 100 gallons—only a fair fungicide. Satisfactory if scab is not too severe, or if applications are made frequently. May be used copiously, at all times, without danger of injury to the trees; is an excellent spreader. For these reasons it is a good fungicide to use in conjunction with nicotine against sucking insects, where heavy and drenching sprays must be used. A strong agitator is needed in the spray tank to get this material in good suspension. Sift the material in the spray tank and wash in with the spray gun. If this cannot be done then the wettable sulphur should be placed in a barrel and worked into a thin paste by means of a paddle with a small amount of water, which should then be added to the spray tank.

BORDEAUX DUST. Usually contains 12 per cent dehydrated copper sulphate, and is generally used in conjunction with 8 per cent arsenate of lime, or 10 per cent arsenate of lead, the remainder being hydrated lime—a good fungicide. The same remarks apply to this material as stated above under Bordeaux Spray.

SULPHUR DUST. Usually used in conjunction with 10 or 15 per cent arsenate of lead—a good fungicide; the sulphur has some insecticidal value.

NICOTINE. (Nicotine sulphate, standard material containing 40 per cent actual nicotine). Used in spray at the rate of one pint per 100 gallons with three or four pounds of soap, or one pound of calcium caseinate (spreader). May be used directly with any of the fungicide sprays, more particularly with wettable sulphur—a strong insecticide against sucking insects; also effective against some biting insects.

NICOTINE DUST. Generally composed of 75 per cent hydrated lime, 20 per cent ground quicklime, impregnated with 5 per cent nicotine sulphate, though may be made satisfactorily from 95 per cent hydrated lime and 5 per cent nicotine sulphate. A strong insecticide against sucking insects; also effective against adult budmoths. Should be dusted when the air is calm, and the higher the temperature the better. Should be used copiously, about 80 pounds per acre on medium sized trees against sucking insects, though probably much less required against budmoths.

ARSENATE OF LIME. Used in spray at rates varying from $\frac{1}{2}$ -pound to 2 pounds per 40 gallons. Contains 40 per cent arsenic oxide. *Should never be used alone on apple foliage as it will cause injuries*—a good insecticide against biting insects. Can be successfully used in conjunction with Bordeaux spray or Bordeaux dust. May be used in lime-sulphur. When using the fungicide "soluble sulphur," arsenate of lime (together with about five times its weight of hydrated lime), is the only arsenical insecticide which should ever be used in conjunction with it.

ARSENATE OF LEAD. Used in spray at rates varying from 1 pound to 3 pounds per 40 gallons. Contains 30 per cent arsenic oxide—a good insecticide against biting insects. Can be used successfully alone or in conjunction with any of the fungicide sprays or dusts, *except "soluble sulphur" in which combination it is dangerous.*

Suggested Spray Calendars (1) 3-10-40 Bordeaux (3 pounds copper sulphate, 10 pounds hydrated lime, 40 gallons water) together with 1 pound arsenate of lime, for the first, second, and fourth, regular applications. Wettable sulphur 30 pounds, arsenate of lead 3 pounds, per 100 gallons, for the third application. Arsenate of lead may be used in place of arsenate of lime in the above. Wettable sulphur may be used for all the after-blossom applications, making three applications closer together in place of the two outlined above, or two applications of lime-sulphur may be used.

(2) Concentrated lime-sulphur (specific gravity about 1.3), 1 gallon to 40 gallons water (specific gravity 1.008) for the first and second applications, and 1 gallon to 60 (specific gravity 1.005) for third and fourth applications, all the above used in conjunction with arsenate of lead 1 pound, or arsenate of lime $\frac{3}{4}$ pound, to 40 gallons. Before making the solutions it is best to test the concentrate with a hydrometer. The specific gravity may vary from 1.24 to 1.33. In order to determine what dilution to make divide the figures after the decimal point in the concentrate by the figures after the decimal in the required solution. Thus, if the concentrate is 1.32 and the required solution is 1.008, divide the .32 by .008. The result is 40. That is, 1 gallon of the concentrate should be diluted to 40 gallons with water to get a solution of 1.008 strength.

(3) Wettable sulphur 30 pounds, arsenate of lead 3 pounds, to 100 gallons of water, for all applications. Applications should be made closer together than in the previous calendars, and more of them.

Suggested Dust Calendars (1) Bordeaux dust composed of 12 per cent dehydrated copper sulphate, 8 per cent arsenate of lime, and 80 per cent hydrated lime, or 12 per cent dehydrated copper sulphate, 10 per cent arsenate of lead, and 78 per cent hydrated lime, for regular applications first, second and fourth. 90-10 sulphur-lead arsenate dust for third application. The sulphur-lead arsenate dust may be used for all the after-blossom applications.

(2) 90-10 sulphur-lead arsenate dust for all applications.
Modifications for Special Pests *Aphids.* Where sprayer is used, add one pint of nicotine sulphate to each 100 gallons of the spray mixture used for the first spray, when leaves are showing green at the tips. Quarter against the wind when spraying, as aphids are clustered on lee side of buds. If green aphids appear in summer after regular sprays have been applied and are damaging fruit, use nicotine sulphate one pint to 100 gallons, together with 4 pounds of soap shaved fine and dissolved in water, or 1 pound calcium caseinate (spreader), or if it is desired to use a fungicide at the time, in 30 pounds wettable sulphur to the 100 gallons.

When using duster, dust with nicotine dust containing 5 per cent nicotine sulphate when leaves are showing green at the tips. Dust when the air is calm but the temperature as high as possible. If green aphids appear in late summer and are damaging fruit, use the same nicotine dust at about the rate of 80 pounds per acre on medium-sized trees.

APPLE MAGGOT. Pick up all drop apples as soon after falling (preferably within four days) as possible, and feed to stock or bury deeply. Destroy all thorn trees in the vicinity of the infested orchard.

The method of maggot control involving arsenical sprays or dusts during July, will have to be abandoned in order to ensure compliance with the British standard of arsenical tolerance in foodstuffs.

For tentative spray and dust control measures, look for announcements from the Annapolis Royal Laboratory during early July.

APPLE SCAB. When scab is a serious pest more applications should be made both before and after blossoming. Three pre-blossom applications are necessary when this period is longer than average. An application (without poison) during blossoming may be necessary in seasons of extended bloom. Subsequent applications after the calyx spray should be made every ten or fourteen days to the end of July in wet seasons. If the orchard is regularly liable to late fruit infections which appear in storage, a special application of either sulphur dust or wettable sulphur (no poison) about September 1 is advisable on susceptible varieties which will not be picked for at least another three or four weeks.

APPLE SUCKER. The treatment for this insect is precisely the same as that given below for the green apple bug. With reference to this insect, when present in very great numbers do not use either Bordeaux spray or Bordeaux dust at the period just before blossoming or foliage injuries may result.

BUDMOTH (Eye-spotted). When using sprayer, treat thoroughly with 1½ pints nicotine sulphate added to any of the fungicides, when the very first of the budmoths are emerging, which is at the time when the tips of buds are breaking. If budmoths are serious, use nicotine in all pre-blossom applications. Use either arsenate of lead or arsenate of lime on the calyx application. If budmoths are present in numbers later, treat the *under side of the leaves* with nicotine sulphate 1 pint, calcium caseinate (spreader) 1 pound per 100 gallons, about August 1.

When using duster apply nicotine dust when moths are first in evidence in appreciable numbers (about July 12) and repeat application about every eight days until moths are no longer making their appearance (about July 28 for last application).

Growers with heavy infestation should consult article in Nova Scotia Fruit Growers' Association Report, for detailed information.

CANKERWORMS. Where cankerworms are very bad, band the trees with a sticky material such as tanglefoot about October 20.

Where sprayer is used, use 3 pounds lead arsenate to 40 gallons water as soon as the young caterpillars are detected.

Where duster is being used, dust copiously with 85-15 as soon as the young caterpillars are noticed.

GREEN APPLE BUG. Where sprayer is being used, spray with wettable sulphur 30 pounds, nicotine sulphate one pint per 100 gallons, very thoroughly and copiously from all angles. Apply after the flower stalks have separated, but before the blossom petals have opened. If green apple bug is very serious, repeat the application just after blossoming.

Where duster is being used, dust with nicotine dust containing 5 per cent nicotine sulphate, at the same time as stated above for spraying. Use the dust copiously about 80 pounds per acre on medium sized trees; dust when air is calm, and the higher the temperature the better.

LARGE BITING INSECTS. If tussock moth, tent caterpillar, fall webworm, etc., are present in very large numbers, apply 3 pounds lead arsenate to 40 gallons water as soon as the young caterpillars can be detected, or dust thoroughly with 85-15 sulphur-lead arsenate dust.

OYSTER-SHELL SCALE. Spray with nicotine, one pint to 100 gallons, when the young scale insects, small yellowish-white objects, are seen moving about on the limbs and trunk, which is generally about five or six days after the blossoms have fallen. The nicotine may be added to any of the fungicides, and care should be taken to cover thoroughly all the trunks and branches.

RED SPIDER MITES. The use of lime-sulphur spray will effect a control of these. If the mites are present in numbers, lime-sulphur should be used for the spray before blossoming and the spray after blossoming.

Sulphur dust will reduce considerably the numbers of the mites, but if the latter are very numerous it will not effect an efficient control.

SOOTY BLOTCH. Treat with sulphur dust or wettable sulphur (without poison) about September 1.

New Materials for Experimental Trial Orchard owners with an experimental turn of mind, who are using lime-sulphur, could assist in obtaining desirable information by using one tank full of the following spray for each application in some part of the orchard. This spray is designed to have the merits of lime-sulphur without its burning properties.

On commencing to fill the spray tank, place in the tank $3\frac{1}{2}$ pounds finely ground crystal aluminium sulphate for every one gallon of concentrated lime-sulphur which it is planned to use. Fill with the agitator running. When tank is full pour in the concentrated lime-sulphur. Use lime-sulphur 1-40 for all applications. Finally add the insecticide, which should be either arsenate of lime, or nicotine. *Do not breathe the gases in the spray tank—they are dangerous.*

Important Warning *Do not use arsenical insecticides in either dust or spray after July 1, in order to ensure compliance with the British standard of arsenical tolerance in foodstuffs.*

NOTE.—For additional information write to either of the above laboratories, but before doing so read this calendar carefully to make sure that the information you want is not contained therein.

